SQL Project

HR Analytics

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Overview

In This HR Analytics Project, we analyze employee data to understand important patterns like when most employees were hired, why people leave, and how to keep them longer. By looking at things like age distribution, gender pay gap , department expenses, bonus percentage, retention rate , turnover rate, salary distribution, tenure analysis, hiring trend and exit trend of employees, we can make better decisions to improve the workplace and support the growth of the company.

Analytical Approach

In this project, we will utilize SQL (Structured Query Language) as a powerful tool to analyze our Employee data effectively. SQL enables us to efficiently retrieve, manipulate, and summarize large datasets from our relational database.

1. Data Retrieval:
    - We will use SQL queries to extract relevant information from our key table Employees. This will help us to focus on crucial HR metrices like retention rate, salary trends, and workforce demographics.
2. Aggregation and Summarization:
    - SQL's aggregate functions (SUM, COUNT, AVG, MAX, MIN) will help us calculating key HR indicators such as:
        - Average Salary by Department
        - Employee Turnover Rate
        - Average Tenure of Employees
3. Joins and Relationships:
    - By utilizing JOIN operations, we can combine data from multiple tables to get a comprehensive views on our Employee data.

Total Number of Employees

```sql
SELECT
    COUNT(DISTINCT Employee_ID) AS Total_Employees
FROM
    Employees;
```

Total_Employees
911

Number of Employees in Different Countries

```sql
SELECT
    Country, COUNT(*) AS Country_wise_employees
FROM
    Employees
GROUP BY Country;
```

Country	Country_wise_employees
United States	578
China	201
Brazil	132

Percentage Share of Employees Based on Gender

```sql
SELECT Gender,
    ROUND(COUNT(*)*100/SUM(COUNT(*)) OVER(),2) AS Employees_Percentage_Share
FROM Employees
GROUP BY Gender;
```

Gender	Employees_Percentage_Share
Female	51.92
Male	48.08

Salary Distribution of Employees Based on Gender

```sql
SELECT
    Gender,
    MIN(Annual_salary) AS min_salary,
    MAX(Annual_salary) AS max_salary,
    ROUND(AVG(Annual_salary), 2) AS avg_salary
FROM
    Employees
GROUP BY Gender;
```

Gender	min_salary	max_salary	avg_salary
Female	40124.00	258498.00	112629.54
Male	40063.00	258081.00	114108.70

Distribution of Employees Based on Each Department

```sql
SELECT Department,
    ROUND(COUNT(*)/SUM(COUNT(*)) over(),2)*100 AS Distribution_of_Employees
FROM Employees
GROUP BY Department
ORDER BY Distribution_of_Employees DESC;
```

Department	Distribution_of_Employees
IT	24.00
Engineering	17.00
Sales	14.00
Finance	12.00
Human Resources	12.00
Marketing	12.00
Accounting	9.00

Total Employees Expenses

```sql
SELECT
    SUM(Annual_salary) AS total_expenses
FROM
    Employees;
```

total_expenses
103253381.00

Percentage Share of Expenses of Each Department w.r.t Total Employees Expenses

```sql
SELECT Department,
    ROUND( SUM(Annual_salary)*100/SUM(SUM(Annual_salary)) OVER(),2) AS Expenses_Share
FROM
    Employees
GROUP BY Department
ORDER BY Expenses_Share DESC ;
```

Department	Expenses_Share
IT	20.25
Engineering	16.12
Marketing	13.90
Sales	13.80
Finance	13.03
Human Resources	12.70
Accounting	10.21

Average Salary of Each Department

```sql
SELECT
    Department,
    ROUND(AVG(Annual_salary), 2) AS Avg_Department_salary
FROM
    Employees
GROUP BY Department;
```

Department	Avg_Department_salary
IT	97239.06
Finance	124564.23
Sales	110440.50
Accounting	125444.10
Human Resources	118138.76
Engineering	109517.90
Marketing	128123.17

Top 5 Employees whose Salary is Greater than Average Salary of their Respective Departments

```sql
WITH avg_department_salary_table AS (
    SELECT
        Department,
        AVG(Annual_salary) AS avg_salary
    FROM Employees
    GROUP BY Department
)
SELECT
     Full_Name
FROM Employees  as e
JOIN avg_department_salary_table AS adst
ON e.Department=adst.Department
WHERE e.Annual_salary>adst.avg_salary
ORDER BY Annual_salary DESC
LIMIT 5;
```

Full_Name
Raelynn Rios
Kinsley Vega
Silas Rivera
Dominic Le
Grayson Chin

Percentage Distribution of Employees w.r.t Different Age Groups

```sql
SELECT
    CASE
        WHEN Age < 25 THEN 'Below 25'
        WHEN Age BETWEEN 25 AND 35 THEN '25-35'
        WHEN Age BETWEEN 36 AND 50 THEN '36-50'
        ELSE 'Above 50'
    END AS Age_Group,
round(count(*)/sum(count(*)) over(),2)*100 as Employees_in_percentage
FROM Employees
GROUP BY Age_Group;
```

Age_Group	Employees_in_percentage
Above 50	33.00
36-50	40.00
25-35	27.00

Average Bonus Percentage in Different Departments

```sql
SELECT
    Department, ROUND(AVG(Bonus_Percentage) * 100, 2) AS Department_avg_bonus_percentage
FROM
    Employees
GROUP BY Department;
```

Department	Department_avg_bonus_percentage
IT	5.27
Finance	11.5
Sales	8.21
Accounting	11.79
Human Resources	10.91
Engineering	7.37
Marketing	11.93

Identifying the Year with the Highest Employee Hiring

```sql
SELECT
    YEAR(Hire_Date) AS Hiring_year,
    COUNT(*) AS New_Hires
FROM
    Employees
GROUP BY Hiring_year
ORDER BY New_Hires DESC
LIMIT 1;
```

Hiring_year	New_Hires
2021	81

Identifying the Year with the Highest Employee Exits

```sql
SELECT
    YEAR(Exit_Date) AS Exit_Year, COUNT(*) AS Exited_Employees
FROM
    Employees
WHERE
    Exit_Date IS NOT NULL
GROUP BY Exit_Year
ORDER BY Exited_Employees DESC
LIMIT 1;
```

Exit_Year	Exited_Employees
2021	19

Average Tenure of Employees in Each Department

```sql
SELECT
    Department,
    FLOOR(AVG(TIMESTAMPDIFF(YEAR,
                Hire_Date,
                IFNULL(Exit_Date, CURRENT_DATE)))) AS Avg_tenure
FROM
    Employees
GROUP BY Department
ORDER BY Avg_tenure DESC;
```

Department	Avg_tenure
IT	12
Engineering	12
Finance	11
Sales	11
Human Resources	11
Accounting	10
Marketing	10

Top 5 Job Titles Having Highest Tenure

```sql
SELECT
    Job_Title,
    TIMESTAMPDIFF(YEAR,
            Hire_Date,
            IFNULL(Exit_Date, CURRENT_DATE)) AS tenure
FROM
    Employees
ORDER BY tenure DESC
LIMIT 5;
```

Job_Title	tenure
Analyst II	32
Systems Analyst	32
Field Engineer	32
Director	32
Engineering Manager	32

Employees Turnover Rate of Each Department

```sql
SELECT
    Department,
    ROUND(COUNT(Exit_Date) / COUNT(*), 2) * 100 AS Turnover_rate
FROM
    Employees
GROUP BY Department
ORDER BY Turnover_rate DESC;
```

Department	Turnover_rate
Marketing	13.00
Engineering	11.00
Finance	8.00
Sales	8.00
Human Resources	8.00
Accounting	7.00
IT	6.00

Employees Retention Rate of Each Department

```sql
SELECT
    Department,
    ROUND((COUNT(*) - COUNT(Exit_Date)) / COUNT(*),
          2) * 100 AS Retention_Rate
FROM
    Employees
GROUP BY Department
ORDER BY Retention_Rate DESC;
```

Department	Retention_Rate
IT	94.00
Accounting	93.00
Finance	92.00
Sales	92.00
Human Resources	92.00
Engineering	89.00
Marketing	87.00